

Application No. 09/901,487
Amendment dated May 11, 2006
After Final Office Action of January 11, 2006

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Docket No.: 02598/000J593-US0

REMARKS

Reconsideration of the application in light of the amendments and following remarks is respectfully requested.

I. Status of the Claims

Claims 1, 2, 4, 5 and 21-25 are rejected.

Claim 26 is newly added. The amendment does not add new matter

Claims 3 and 16-20 were previously cancelled.

Claims 6-15 and 22-25 were previously withdrawn.

Claims 1, 2, 4-15 and 21-25 are currently pending.

II. Telephone Interview

A telephone conference was held between Raffaele DeMarco and Examiner Huffman on April 10, 2006. The drawings and scope of the claims were discussed. A colorized version of Figure 4 of the present application (attached hereto as Exhibit 1) was provided to the Examiner. Figure 4 clearly shows that the drawings illustrate a PCB having a hole therethrough. As a result of that discussion, Examiner Huffman explained that Applicant should resubmit the arguments from the amendment and response to the previous office action (mailed July 25, 2005) which, combined with the Examiner's present understanding of the drawings, should overcome the Kitayama reference and remove the finality of the rejection from the case. Accordingly, Applicant has resubmitted the arguments set forth in that previous response and requests reconsideration of those arguments in light of attached Exhibit 1 and the telephone discussion held on April 10, 2006.

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III. Rejections Under 35 U.S.C. § 103

Claims 1, 4 and 5 are rejected under 35 U.S.C. § 103(a) as being unpatentable over JP 01-095553A to Kitayama in view of JP 03-011757 to Masaaki et al. ("Masaaki"). The Examiner states that Kitayama discloses an image sensor having all of the features of the claimed invention except an epoxy resin molded to the PCB on which the image chip is mounted. The Examiner contends that this feature is disclosed by Masaaki and that it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Kitayama and Masaaki to produce the claimed invention. Applicants respectfully traverse the rejection.

Kitamaya's arrangement utilizes conventional leads which on one end are connected to a chip package and on which the other end is inserted into a PCB to connect a chip package to a PCB. Kitayama's arrangement is disadvantageous because the overall image sensor module is relatively large, taking up valuable space as it would sit up above the PCB. In contrast, the present invention includes an image sensor module with "a PCB having an opening at a predetermined portion therethrough; [and] an image chip seated in the opening" as is shown in Fig. 4. The image chip is thus seated within the opening of the PCB resulting in an overall more miniaturized or compact arrangement for the image sensor module which takes up less of the limited space. Moreover, the image chip is secured in the PCB with an epoxy resin. Neither Kitamaya nor Masaaki, alone or in combination, disclose any of these features.

The arrangements of Kitayama and Masaaki are generally shown in prior art Fig. 1, which shows an image chip disposed in a recess or groove in a PCB. This differs from the features of claim 1 which, as mentioned, recites that the image chip is seated in an opening of the PCB. Kitayama and Masaaki neither disclose nor suggest an image sensor module with "an image chip seated in an opening in a predetermined portion of the PCB."

Furthermore, claim 1 also recites that the image sensor module includes "epoxy resin molded to the predetermined portion of a rear surface of the PCB, in which the image chip is mounted." The arrangement of Masaaki shows an image chip disposed on a front surface of that which the Examiner contends is a PCB. The epoxy resin of Masaaki is also disposed on the front

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surface of the PCB behind the image chip. Neither Kitayama nor Masaaki disclose or suggest including an epoxy on a rear surface of the PCB and mounting the image chip therein. Claims 4 and 5 depend from claim 1 and are patentable for at least the same reasons as stated with respect to claim 1. Applicants respectfully request that the rejection be withdrawn.

Claim 2 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Kitayama in view of Masaaki and further in view of JP 01-248542 to Takashi. Claim 21 is rejected under 35 U.S.C. § 103(a) as unpatentable over Kitayama in view of Masaaki and further in view of U.S. Patent No. 6,268,231 to Wetzel. Claims 2 and 21 depend from claim 1. Neither Takashi nor Wetzel disclose or suggest an image sensor module with "a PCB having an opening at a predetermined portion therethrough; [and] an image chip seated in the opening" as recited in claim 1. Accordingly, claims 2 and 21 are patentable for at least the same reasons set forth with respect to claim 1. Applicants respectfully request that these rejections be withdrawn.

Applicant notes that newly added independent claim 26 similarly discloses the arrangement recited in independent claim 1 as it was filed. Claim 26 does not include the epoxy resin portion limitation presently found in independent claim 1. Applicant respectfully submits that newly added independent claim 26 is patentable for at least the reason relating to the PCB having an opening at a predetermined portion therethrough with an image chip seated in the opening as provided above with respect to independent claim 1. Accordingly, Applicant respectfully requests that claim 26 be allowed and passed to issue with the other pending claims.

CONCLUSION

Each and every point raised in the Office Action dated January 11, 2006 has been addressed on the basis of the above amendments and remarks. In view of the foregoing it is believed that claims 1, 2, 4, 5, 21 and 26 and are in condition for allowance and it is respectfully requested that the application be reconsidered and that the pending claims be allowed and the case passed to issue.

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If there are any other issues remaining which the Examiner believes could be resolved through a Supplemental Response or an Examiner's Amendment, the Examiner is respectfully requested to contact the undersigned at the telephone number indicated below.

Dated: May 11, 2006

Respectfully submitted,

By 

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